

Serial No. 09/881,254

B<sup>1</sup>  
Cont  
a trench extending through said source region, through said body region and into said drain region; and

a gate region comprising an insulating layer lining at least a portion of said trench and a conductive region within said trench adjacent said insulating layer,

wherein (a) said body region is separated from said source metal, and (b) a doping profile along a line normal to upper and lower surfaces of said device is such that (i) the doping profile is non-uniform within the body region, and (ii) within said body region and within at least a portion of said source and drain regions, the doping profile on one side of a centerplane of the body region is substantially symmetric with the doping profile on an opposite side of the centerplane.

B<sup>2</sup>  
14. (Amended) A trench MOSFET transistor device comprising:

a silicon drain region of N-type conductivity;

a silicon body region of P-type conductivity provided over said drain region, said drain region and said body region forming a first junction;

a silicon source region of N-type conductivity provided over said body region, said source region and said body region forming a second junction;

source metal disposed on an upper surface of said source region;

a trench extending through said source region, through said body region and into said drain region; and

a gate region comprising a silicon dioxide layer lining at least a portion of said trench and a doped polycrystalline silicon region within said trench adjacent said silicon dioxide layer,

wherein (a) said body region is separated from said source metal by said source region, (b) said source and drain regions comprise the same doping material, (c) said source and drain regions have peak net doping concentrations that are greater than a peak net doping concentration of said body region, and (d) a doping profile along a line normal to upper and lower surfaces of said device is such that, (i) the doping profile is non-uniform within the body region, and (ii) within said body region and within at least a portion of said source and drain regions, the doping profile on one side of a centerplane